

## REPORT OF THE POMOLOGIST.

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SIR: I have the honor to submit my fourth annual report as pomologist of this Department. The past year's crop was very abundant except in the case of the apple, and the prices have generally been satisfactory to the fruit-growers. Each year widens the range of the growth and consumption of fruits. The raising by the farmers and small land-holders of fruit for home use is constantly on the increase.

Interest in the work of this division is steadily increasing. Inquiries regarding pomological matters have been received during the year from every State and Territory of the Union. More than ten thousand specimens of fruits have been received, sent either for identification or for study and comparison, and the labor required to properly examine these specimens, to make drawings or paintings of them as the case has required, to study their peculiarities, and to answer the inquiries and conduct all necessary correspondence has called into exercise the utmost resources of the division. The importance of diffusing knowledge as to the true names of fruits is such that I think it well to repeat the suggestions made in my report of last year to all who are interested in this work, that they apply to me for boxes and franks to enable them to send specimens here, free of postage, for identification or study, or as samples of the fruit products of different sections of our country. The extreme variations of climate in the United States effects wonderful changes in varieties of fruits, and to study these changes is not only intensely interesting to the scientific pomologist, but of great value to the practical fruit-grower, as he thus learns to know what variations are wrought by transplanting and their probable cause. The knowledge of the changes wrought in certain varieties often leads to correct conclusions as to other varieties, and a determination may thus be reached as to the propriety of their introduction or rejection without the expenditure of time and money in experiments.

### PROCURING AND DISTRIBUTING SEEDS, PLANTS, AND SCIONS OF FRUITS.

Through the courtesy of the Department of State and of correspondents of this division, I have secured a few rare and valuable varieties of fruit from foreign countries; and several public-spirited citizens of our own country have donated seeds, plants, and scions of choice fruits of native origin, all of which have been distributed in those sections to which they seem to be best suited. They are as follows:

*Sugar apple (Anona squamosa).*—Seeds were received from the Philippine Islands and from southern Florida.

*Cherimoya (A. cherimoya)*.—Received from Philippine Islands.

*Cocos australis*.—From southern Louisiana.

*Egg fruit (Lucuma rivicosa)*.—Seeds obtained from Key West, Fla. This is a very rare and delicious tropical fruit.

*Mammee apple (Mammea Americana)*.—A tropical tree bearing a large fruit. Seeds obtained from Key West, Fla.

*Downy myrtle (Myrtus tomentosus)*.—This is a very beautiful shrub for the lawn, which bears a berry-like fruit of good quality. It is tender, except in the extreme south. Seeds obtained from southern Florida.

*Japanese walnut (Juglans seiboldi)*.—Nuts obtained from Japan, and distributed in the central and southern States, where it is thought it may succeed.

*Myrica rubra (Myrica rubra)*.—Seeds obtained from H. H. Berger & Co., San Francisco, Cal., who imported them from Japan; and I give their description of the tree and its fruit:

This evergreen fruit-bearing tree, indigenous to Japan, has only lately attracted the attention of botanists. It is a native of the southern part of Japan, attains a height of 40 to 50 feet, and a diameter of  $2\frac{1}{2}$  to 3 feet. The foliage, which is evergreen, resembles the magnolia, and is of a firm leathery texture. The fruit-blossom appears early in the spring, and the fruit ripens during the month of July. It resembles in shape a firm blackberry, an inch long by three-fourths of an inch in diameter. It contains a single seed stone of light weight. There are two varieties of this fruit, one a dark red, almost black, and the other a light rose, which is superior in flavor to the dark. The fruit is highly flavored, vinous and sweet, and answers all purposes our blackberry is put to.

It is delicious as a dessert fruit, makes a fine preserve, jelly, or jam. The juice extracted from it may be taken as a refreshing beverage in its fresh state, and after being allowed to ferment produces a fine wine; set with alcohol a brandy is gained from it equal to our famous blackberry brandy. The tree itself is highly ornamental, the bark is useful for dyeing a fawn color, and the timber is used in Japan for the most elegant cabinet-ware, having a finer mottled grain than the bird's-eye maple. The wood is light, tough, and very durable. The tree is perfectly hardy in all latitudes where the thermometer will not fall below 15 degrees above zero. It would succeed admirably throughout California, Texas, New Mexico, and all the Southern States of the Union.

The propagation of this useful tree is best carried on from seed to which it comes true, or by grafting scions from fruit-bearing trees on seedlings, which will thus come in bearing in a couple of years. The seed ought to be sown in leaf-mold and loamy soil, with bottom heat where obtainable. The same ought to be kept well shaded and mulched.

The natives of the provinces of Japan, where this tree forms small forests, say that the seed germinates best when having been eaten by birds it is passed through the excrements into soft leaf-mold, in shady places, when it germinates in a few days; or if the seeds have by accident been thrown in a rubbish heap, soil and other vegetable matter, on being cleaned away, say after a month's time, seeds have been found well sprouted among the wastes.

The seed is light and ripens during July and August. Plants are not to be obtained as yet, the Japanese having never propagated the tree beyond the chance seedlings. There is no doubt that this tree would be a most valuable acquisition for California.

*Myrica nagii*.—This is another new species from Japan, seeds of which I imported and distributed in the Southern States.

*Koshu grape*.—This is a variety of *Vitis vinifera*, which has been grown in Japan for nearly six hundred years, according to reports, and is the best grape they have in that country. Authentic accounts, as well as specimens of the fruit sent me from Japan, lead me to believe that the variety is not so good as many we now have of that species, and further introduction of the grapes of Japan will neither be necessary nor productive of good.

*Granadilla (Passiflora edulis)* is a species of Passion Flower from

the West Indies, which produces fruit abundantly and of good size and quality. In color it is externally a dark purple, and inside it is composed of a rather seedy tomato-like pulp, which has a very pleasant acid taste. It grows readily from seed, and although the vine dies down annually, the roots are perennial. It is only suitable to a very warm climate. Seeds obtained from Florida and sent to many of the Southern States and Territories.

*Common guava* (*Psidium guajava*).

*Cattley guava* (*P. cattleyanum*).—This is a small red variety. The species endures considerable frost.

*Mexican guava*, incorrectly called "Yellow Cattley Guava" (*P. lucidum*).

*Kaki* (*Dyospyrus kaki*).—Having received a great many choice specimens of this fruit from the Southern States, seeds were saved from such as I was able to identify as distinct varieties. These were sent south to be grown by careful experimenters, with a view to determining, by producing fruit from them, the extent of the probable variation of the seedlings of these varieties.

*Cocoanut* (*Cocos nucifera*).—Thirteen named varieties of the choicest kinds grown in the Philippine Islands were obtained through the consul at Manilla and distributed along the sea-coast in the extreme southern part of Florida, where they are already beginning to grow. The varieties are as follows: Grandes, Caputiformus, Rubiscens, Pequinitos, Maputi, Cayomanis, Bahan, Polac, Bosa, Boraves, Dajili, Dajila Patot, and Mamlaris.

*Kelsey plum*.—Grave doubts being entertained by many pomologists as to the hardiness of this plum in the Northern States, I secured scions of undoubted identity and placed them in several of the experiment stations for propagation and trial, wishing especially to determine just how far north it may be grown.

*Summer Rose Apple*.—Scions of this choice summer apple were obtained and distributed in both Northern and Southern States.

*Mango* (*Mangifera indica*).—Grafted trees of six of the choicest varieties known in the East Indies were obtained from Bombay and placed in the hands of experienced persons to propagate at Lake Worth, Fla. The varieties are as follows:

*Alphonse*.—This is said to be the best of all the mangoes known. In weight it averages about 8 ounces, and is of a greenish color enriched with crimson on the sunny side. It is slightly oblong, and lacks the prominent beak, which is a characteristic of many varieties. The tree is said to be a rather stunted and straggling grower. The leaves differ from many other kinds in having a bright-red midrib, which color is retained until they are mature and almost ready to drop. The variety is quite easily distinguished by this characteristic.

*Pirie*.—This fruit is about 8 ounces in weight, of a greenish color with a red cheek, and has a prominent beak at the end opposite the stem. In flavor it is exceedingly delicious. The tree is a good grower and takes a handsome shape.

*Mulgoba*.—This is a variety producing very large fruit, averaging about a pound. The skin is of greenish-yellow color and rarely blushed.

*Banchore*.—This variety bears fruit averaging 10 ounces, and is of superior quality. The tree is vigorous, upright in habit, and bears abundantly.

*Banchore of Dhairey*.—The average weight of this variety is about

8 ounces; in form it is oblong, without a beak, and is yellowish-green when ripe. The flesh is dark golden in color, very sweet, and has a peculiar sprightly flavor. The tree bears abundantly and is a good grower. It is said that this variety was considered so choice "by the ruler at Poona that he kept a guard of Arab soldiers over the original tree when in fruit to secure it for his own use."

*Devarubria*.—(No description obtainable.)

All the above varieties are entirely free from the fiber which is found in the flesh of common mangoes.

It will be noticed that a majority of the fruits distributed are suitable to the Southern States. This comes from two causes, namely: The fact that in the absence of any fund with which to purchase and distribute fruits I have been able to send out only such as were donated or sent to me in exchange, and such as are found in the colder parts of foreign countries have been more generally imported and distributed heretofore.

### FRUITS ORDERED FROM FOREIGN COUNTRIES.

#### THE ASIATIC PERSIMMON.

Having been informed by members of the legations of Japan and Korea resident in Washington that there are growing in those countries varieties of the persimmon which endure climates where snow and ice abound, I have taken steps to procure, through the Department of State and other sources, seeds and grafted trees of the hardiest kinds, which, when received, will be distributed through the central States. This is one of the choicest fruits of eastern Asia, and especially is this true of Japan and Korea. It is my purpose to thoroughly investigate the subject and to introduce the best and hardiest varieties if we have not already obtained them. Many kinds introduced from these countries which are now growing here are elsewhere mentioned in this report.

#### THE FIG.

Fig culture is attaining great magnitude in this country, and it is especially important, in view of our large importations of dried figs, that we obtain the very best varieties known in the world especially for our fruit-growers in California, Arizona, New Mexico, and southwestern Texas. Many varieties have already been introduced, but it is the conviction of nearly all of the most intelligent horticulturists who are experimenting with this fruit that the variety or varieties from which the true fig of commerce known as the "Smyrna fig" is produced has not yet been obtained. I have therefore lately taken steps to obtain, through our consuls in several of the best fruit-growing sections of Turkey, information regarding this particular point and to secure cuttings of the variety or varieties from which the choicest dried-figs are made. Having learned that there are also very choice varieties of the fig growing in Peru, I have sent a request, through the Department of State, to our consul at Lima to make a thorough investigation and obtain and forward cuttings of the best varieties in that country.

#### ASIATIC PEACHES.

With the hope of obtaining a strain of peaches that will probably do well in this country, I have applied to our consuls abroad to obtain from Bokara in Turkestan several bushels of seeds of the choicest varieties grown there. It is barely possible that these may

produce a race of peaches that will be free from the dread disease known as "peach yellows," as to the cause of which authorities are disagreed but which is receiving the most careful attention of this Department.

#### THE GRAPE.

In the course of investigations regarding this fruit I have been informed that in Persia and Palestine there are varieties of the choicest quality of the species *Vitis vinifera*, which have not yet been introduced here. In the early part of this year I addressed a letter to our minister at Teheran and another to our consul at Jerusalem, asking that they investigate the matter and procure cuttings or rooted plants of the choicest kinds, naming and describing those which I especially desired to obtain. The following letter was received from Hon. E. Spencer Pratt, our United States minister at Teheran:

SIR: I have received through the Department of State your letter of the 20th of July last, inclosing a copy of a communication relative to a paper on vine culture in Persia, which Mr. Bernay, consul (general) of France at Tauris (Tabriz), had read before the French Acclimatization Society, and requesting that I furnish you with such information as I possessed or might be able to obtain concerning the particular vines mentioned in said paper, and that I forward you cuttings of the same if possible.

In this connection I beg to say that in a dispatch which I had the honor to address to the Secretary of State on the 28th ultimo, shortly before the receipt of your present favor, I called special attention to the superiority of the vines of the Persian table-lands, and suggested that your Department be recommended to consider the propriety of introducing the better varieties of these into the United States, where, under a more improved system of agriculture and with similar conditions of soil and climate, such as appear to exist in California, New Mexico, and other portions of the West, I was firmly of the opinion that the most excellent results could be obtained.

It is therefore with all the more gratification that I note the interest you are now taking in this matter and the desire you evince for attempting the very experiment I had proposed.

The Shaki Askari and Rich Baba or Galin Barmaghi are indeed most superior grapes and well deserve the praise that has been accorded them. They are to be found throughout the great plateau as well as in the southern provinces, and in that of Azerbaijan, of which Tauris or Tabriz is the capital, and which the river Aras (Araxes) separates from the Russian Caucasus.

There are many and expensive vineyards about Casrine, and those about the neighborhood of Teheran are annually increasing, yet the capital derives its main supply of grapes both for table use and wine making from the district of Sharia, situated between the cities mentioned.

The Ispahan district possesses also a considerable acreage in vines, and so do Hamadan and Sharaz. All of these furnish their pro rata of grapes for food, for fermentation and distillation.

As in the past, however, so at this day, it is to the wines of Sharaz and Hamadan, and especially to the former, that the connoisseur awards the prize for excellence.

And I can not but think that there may be some foundation for the tradition that the vines which furnish the famous Spanish Sherries were originally derived from Sharaz stock, which after successive transplantations along the path of Arab conquests reached at last the peninsula.

Considering this high and well-merited reputation which these vines and their products enjoy, not only in Persia but throughout the Orient, they are entitled, I think, to special consideration. Concerning them I accordingly submit the following, which possesses the merit of coming from one who speaks from personal observation. There are two classes of vines grown at Shariz and in its district, viz, the irrigated and the unirrigated.

The irrigated vines are generally grown in the gardens and cultivated as follows: Ditches of about 2 feet in depth and three in width are dug in a zig-zag form, and the slips and cuttings are planted along their borders and at a distance of about 2 yards apart. The ditches are as a rule filled with water once a week.

These vines bear in about three years. Their fruit is used for the table and dried into raisins. The names of the best sorts are Askari, Sahrhi (which is pink in color), and Rich Baba.

The Askari and Sahrhi grapes are very delicate and ripen earliest. The Rich Baba can be kept until March.

There is also another kind which is named Sur Kush. These are thick-skinned and are generally used for making vinegar and sirup.

The unirrigated vines are those which are planted on the skirts of the high hills and entirely dependent for moisture on snow and rain. Their fruit is round, thick-skinned, and much sweeter than that of the irrigated sorts. It is used for making wine, sirup, and vinegar.

The best of the above varieties comes from the village called Khullar, situated 32 miles from Shiraz on a high hill, the slopes of which are covered with immense vine gardens.

Both the irrigated and the unirrigated vines are trimmed once a year, during the month of February, when the ground is also turned and manured if necessary.

I shall reserve for another occasion the further discussion of this subject, which seems to broaden as I enter upon it, and which, owing to the absence here of anything like agricultural or statistical bureaus for reference, will not admit, as you can well imagine, of being readily disposed of.

Already, however, I have begun to take the necessary steps for procuring from different sections cuttings or vines highest in repute throughout the empire, which, with such specific information in the premises as I am able to gather from the most reliable sources, will be furnished you as soon as possible.

The expense and trouble which the above will entail I shall be happy to assume in view of the object to be attained, and shall consider myself amply repaid if, through my efforts, our vine-growers shall be enabled to reproduce upon American soil the luscious fruits of Persia's vineyards.

I am, sir, your obedient servant,

E. SPENCER PRATT,  
*United States Minister.*

#### THE DATE.

It may not be generally known that there are large areas in southern California, Arizona, New Mexico, and Texas where in all probability the date may be grown and cured for market. This fruit requires a semi-tropical climate. It will endure occasional frosts, but the air with periods of great heat during the growing season must be very dry. The soil should be rather rich and underlaid with plenty of water within reach of the roots. These conditions, I think, may be had in the regions above mentioned, which as a rule are very similar to those parts of Asia and Africa where the date is extensively grown for consumption and export. Water can be applied to the roots by irrigation, but of course it will be impossible to grow the date where this can not be done. It is now being grown in a small way all along our entire southern border, but it is only here and there that a few seedling trees may be seen. Being a diœceous plant, that is, the flowers of the two sexes being on separate trees, it is necessary that the two kinds be grown in proximity, in default of which the fruit will not come to perfection for lack of pollination.

In date-growing countries it is found that one male in every twenty trees is sufficient to produce pollen for the others. Qualities and sizes of the several varieties differ greatly one from another, as is the case with other fruits, and we should therefore endeavor to secure rooted suckers only from the best fruit-bearing or pistillate trees. This can only be done by banking the earth about the base of old trees and watering it until roots have grown from the base of the suckers or side shoots, this being a slow process. I have during the past year communicated with our minister at Teheran, the consul-general at Cairo, in Egypt, and the consuls in Arabia and Algeria, giving them explicit instructions how to procure and forward rooted plants of the choicest varieties. It will necessarily take a great deal of time and entail some expense, but I trust the good to

be derived in the way of producing within our borders fruit which we are now obliged to import will well repay us. Even if we may not be successful in stopping foreign importations I feel confident that we will add materially to the list of choice fruits of home growth.

#### THE CITRON.

This fruit is closely allied to the orange and lemon. It has a very thick sweet rind, from which is prepared the article known by grocers and cooks as "preserved citron." This commodity ranges in price from 25 to 35 cents per pound, and is considered quite a necessary article by many of our people. Every pound now sold in our markets is brought from foreign countries, chiefly from the Mediterranean regions. In some parts of southern California and Florida the fruit is now successfully grown. A few experiments have been made in the way of preserving the fruit in this country, but all agree that the varieties they are cultivating are either inferior seedlings or such as are not entirely suitable for preserving purposes. I have therefore requested through the Department of State that our consuls at several of the ports in Italy from which the citron is exported obtain and forward budded trees of the varieties grown there, from which the finest commercial article is prepared.

#### NATIVE FRUITS.

##### WILD FRUITS INVESTIGATED.

Investigations have been continued with a view to discovering and developing the rich treasures which nature has scattered in the form of wild fruits, and often hidden in almost every nook and corner of our country.

In pursuance of this idea Prof. T. V. Munson, of Denison, Tex., was commissioned as a special agent during July, August, and September, and instructed to visit personally such sections as have been heretofore but little known, especially in the Western States and Territories. Mr. C. L. Hopkins, a clerk in this division, was detailed to accompany and assist him, and the salient points obtained will appear in the reports of this division as occasion may require.

#### THE CHESTNUT.

Nut culture is assuming more importance as an industry in this country than formerly; in fact until recently it has scarcely been attempted. Among the native nuts there are perhaps none of more importance than the chestnut. It grows naturally over a large part of the United States, beginning with Kentucky and Ohio, reaching northeast to the boundary and eastward to the Atlantic Ocean. The wild nut is exceedingly rich in flavor and very sweet. In these respects it is superior to the European or the Asiatic strains. Moreover our native chestnut seems to thrive much better than the foreign varieties, but in the size of nuts the latter have the advantage. A number of varieties of our American species, *Castanea vesca*, have been brought to notice, and are now propagated by grafting and budding, showing signs of a decided improvement as compared with the ordinary kinds found in the forests.

There are in Pennsylvania, Maryland, Virginia, Ohio, Kentucky,

Eastern Tennessee and the mountain regions of the Carolinas and northern Georgia, and all that part of our country lying northward of the States named (except in northern New York and a part of the New England States where the climate is not suitable) large tracts of lands now yielding small returns which might be profitable if planted to chestnuts. Many old worn-out fields which are practically worthless in their present condition might be thus turned to good account. The timber would be commercially valuable, but the nuts would bring much larger returns to the owner. Once started and cultivated for a few years, until they begin to shade the ground, the trees would require very little further attention except to thin them out. As an article of food the chestnut is very valuable, but at present the prices are very high. Even the common nuts from ungrafted trees would repay the use of the land, but it would be much better to plant only grafted trees of the choicer varieties.

In my report for 1887, directions were given for budding and grafting the nut trees, which is a rather difficult thing to do; but with proper care a reasonable degree of success may be attained.

*Paragon*.—Perhaps the most valuable variety yet introduced is the Paragon, which was brought into public notice by H. M. Engle & Son, of Marietta, Pa. It is possible that this variety may have some foreign stock in it, as the leaves differ slightly from those of our native species, but the trees seem to be very thrifty and have successfully withstood the winters of the last fourteen years in Pennsylvania. Mr. Engle informs me that he "obtained it from a few scions received from an amateur horticulturist (now deceased) in Philadelphia, and never learned where the horticulturist got the stock," hence the origin is unknown. It has perhaps not been disseminated except through the firm now handling it. The tree bears abundantly and at an early age. The nuts are very large, averaging nearly an ounce in weight. The accompanying illustration (Plate 1) was made true to nature from specimens received this year from the Messrs. Engle.

*Dupont*.—A variety named Dupont has been received from Delaware and is a pure native seedling without doubt. The original tree near Dover, Del., is said to have borne from \$30 to \$40 worth of nuts annually for years past, but within the last year or two the rose-bug has partially destroyed its blooms. The nut is almost as large as the Paragon and fully equal to it in flavor.

#### THE PLUM.

Reference has been made to this fruit in all my annual reports, and the increasing value the native species are attaining warrants me in giving it special attention again. Native plums are found in almost every State and Territory of the Union, except it may be a small region in the extreme Northwest. The best varieties seem to be found in the region bounded by Minnesota and Wisconsin on the north and Texas and Arkansas on the south. A large number of varieties have been taken from their native habitats and brought into general notice. The Wild Goose, which is a native of Tennessee, is one of the choicest varieties and stands almost without a rival among the varieties of *Prunus chicasa*, which species includes nearly all the early ripening varieties.

Having again examined within the past year specimens of nearly all the leading varieties of our native plums, I feel justified in saying that among the best is the



*Hawkeye*.—I received specimens of this variety (Plate 2) from Mr. H. A. Terry, of Crescent City, Iowa, which measured  $1\frac{3}{8}$  inches in diameter, and which were grown on an overloaded tree that ripened its fruit at the time of a severe drought. The flavor when fresh was equal to any of the wild plums I have ever tasted, and when cooked and critically tested, it was less acid than any others tried at the same time.

In color it is light red, and it is one of the handsomest wild plums I ever saw. It has been in the hands of experimenters since 1885, and thus far I have heard no complaint of its being tender. It is clearly evident from the fruit, wood, and leaves, that it belongs strictly to the species *P. Americana*, and I have no hesitation in recommending it to public attention and hope it may be thoroughly tested all over the country. It is possible that it may not endure the winters of some of the extreme Northern States, but it certainly thrives as far north as southern Minnesota and Massachusetts.

Mr. O. M. Lord, of Minnesota City, Minn., is one of the most extensive experimenters with hardy plums in this country, and has a large number of varieties, several of which are well worthy of trial. Among the newer kinds may be found *Rollingstone*, *Leudloff*, *Cheney*, *Gaylord*, *LeDuc*, and *Kopp*. All these belong to the species *P. Americana*, and will no doubt prove hardy in all the Northern States. It is not claimed that any of these varieties are equal to the European kinds, either in size or quality, but they are much hardier in character of tree and especially valuable as they are able in a great measure to withstand the attacks of the curculio.

Farmers and fruit-growers will act wisely in giving our native species a fair trial; for it is certain that if they do they will be abundantly supplied with fruit except it be under very unfavorable conditions.

#### THE CURRANT.

Among the wild fruits of recent introduction which are likely to prove of special value is the wild currant of our western plains and mountain valleys (*Ribes aureum*). A variety known as

*Crandall*—Was originated by Mr. R. W. Crandall, of Newton, Kans., from seed sown by him, which was produced by a plant of the wild currant, which had been removed to his garden from its natural habitat in southwestern Kansas. For many years past I have had opportunities to observe on many farms in Kansas and other Western States, wild varieties of this species, which had been transplanted into the gardens of settlers on the prairies, as well as growing in its native state along the streams and ravines of the States and Territories lying just east of the Rocky Mountains; and although many of the varieties were of good size and quality and bore abundantly, yet I have never seen any of them that equaled the Crandall. Branches of the plant that I have seen have been invariably loaded with fruit, and in my estimation too heavily loaded; many of the berries were one-half inch in diameter, and some even larger, and intensely black. I have eaten the fruit both in its cooked and uncooked state, and although in my opinion it is not equal in quality to some of our best varieties of the cultivated currant, it is far better than any of the black currants of Europe, having no strong odor or unpleasant taste. It is well adapted for sauces, pies, jellies, and other preparations usually made of fruit. The plant grows to a height of 4 feet or more and is well suited to the changeable climatic conditions of Kansas, Iowa, and Nebraska, and I think of the region even farther north, as I never heard of its

having been winter-killed, though varieties of this species are to be found growing wild in many of the Northwestern States and Territories. No insect enemies have been found to defoliate it, and in the Eastern States, where the ravages of the Currant Worm are disastrous to the common currant and gooseberry, it has never been found to attack the Crandall. A correct illustration made from a specimen received from Mr. Frank Ford, of Ravenna, Ohio, is found in Plate 3 of this report.

#### THE APPLE.

Among the many new and little-known varieties of this fruit which have been received at this office during the past year may be named several which give promise of valuable qualities.

*Garfield.*—The origin of this variety is unknown, but probably it was first grown in central or northern Illinois; and the name Garfield was first applied to it by Mr. J. V. Cotta, of Nursery, Ill., who propagated it extensively and brought it prominently before the public. Its chief points of excellence are hardness of tree, combined with good quality and appearance of fruit, and it is a variety worthy of a more extended trial in the Northwest, where apple-culture is carried on in many cases with indifferent success. In the letter accompanying specimens of the fruit from which the colored illustration (Plate 4) was made, Mr. Cotta says:

How well this variety is adapted to this section of the country is evinced by the fact that trees twenty-five to thirty years old are still in prime condition notwithstanding the severe winters of 1882-'85, which destroyed the greater part of our orchard trees.

Size, medium to large; shape, nearly round, slightly flattened, regular; surface smooth, brilliantly colored, with scarlet and crimson streaks and splashes over a yellow ground; dots numerous, small and gray; basin rather deep, abrupt, regular; eye closed; cavity deep, narrow, slightly waved, russet; stem medium; core wide, usually open, meeting the eye; seeds plump and numerous; flesh yellowish white, rather coarse grained, firm; flavor subacid; quality good; season November to January in northern Illinois.

*Windsor.*—This is another claimant for favor in the Northwest, having originated in Wisconsin. Specimens were received from Mr. J. C. Plumb, of Milton, in that State, who recommends it as one of the hardiest varieties he has in cultivation. The cut (Plate 5) is from a specimen grown by him. Professor Budd, of Iowa, says of it: "It stands best of any apple I have from Wisconsin." It appears to be a variety that will keep all winter when grown in that region. The tree is said to be handsome in appearance, very prolific, and an early bearer. Although not of large size it is of fairly good color and quite well flavored. It is worthy of trial by the farmers and fruit-growers of the Northwest.

Size, small to medium; shape, flat, conical, slightly angular in form and resembling the Red Canada; surface rather smooth; color greenish yellow; suffused with dull and indistinct red splashes, rarely striped; dots gray, numerous, large, surrounded near the base with russet; basin rather deep, narrow, abrupt, regular; eye small and closed; cavity wide, sloping, russet; stem medium to long, slender; core small, closed, clasping the eye; seeds small, elongated, pointed, rather light colored; flesh firm, fine grained, juicy, very pale yellow; flavor subacid, pleasant; quality very good; season, December to spring in Wisconsin.

*Lacon*.—This is also a candidate for favor in the North. Specimens were received from Mr. E. R. McKinney, of Lacon, Ill., this year, and the name Lacon was given it by myself. The original tree, which stood near the town whose name the fruit bears, is dead. Mr. McKinney says of it:

It makes a round compact head, wood short jointed, in all respects resembling at a little distance the Whitney No. 20 Crab. The tree from which I send you specimens, the Whitney No. 20 Crab, Red Astrachan, Romanstem, and Fameuse are all the sorts I have left in an orchard of nearly one hundred varieties. It is the healthiest of the lot, showing no signs of ill health, decay, or disease. In my opinion, on account of good bearing qualities, hardiness, size, and quality of fruit, notwithstanding its bad color it will be a good sort to introduce.

I concur in his opinion. The illustration on Plate 6, Fig. 1, was made from an average specimen received from Mr. McKinney.

Size, medium to large; shape, irregular, flattened, unequal; surface, smooth, yellow, and green, slight bronzy blush, a few russety splashes; dots, numerous, irregular, and russety; basin, deep, somewhat elongated; irregular and wrinkled; eye generally open, and sepals reflexed; cavity closed, narrow, acute, irregular, rarely russety; stem short, stout; core medium, open; seeds abundant; flesh yellow, firm, fine-grained, juicy; flavor mild, subacid, pleasant; quality good; season from October to January in northern Illinois.

*Peffer*.—A variety originated by Mr. George P. Peffer, of Pewaukee, Wis., from seed of Pewaukee apple, and named in his honor. (See Plate 6, Fig. 2.) It is thought to be better than the parent variety in some respects, and I bespeak for it a fair trial in the colder States. Size, medium to large; shape, diameters nearly equal, angular, irregular, slightly lop-sided; surface, polished, yellow with abundant splashes and flecks of bright red and scarlet, handsome; dots, numerous, brown or gray; basin, deep, abrupt, irregular or ribbed; eye, open, large, with reflexed sepals; cavity, medium, sloping, nearly regular, very slightly russeted; stem, short, thick, fleshy; core, open, small, meeting the deep eye cavity; seeds, many, large, plump; flesh, white, tender, fine grained, juicy; flavor, subacid; quality, fair to good; season, early winter in Wisconsin.

*Bloomless and coreless apple* (so called).—For several years past the rural papers have mentioned a variety said to be bloomless, coreless, and seedless, and after several trials I have been able to secure specimens from Mr. G. W. Robinette, of Flag Pond, Va., on whose farm the variety grows. (See Plate 7.) Its origin is a matter of considerable doubt, as varieties of similar description have been mentioned for many years and even centuries past. The tree is not bloomless, of course, as it would not produce fruit, but the flowers have no petals. The essential organs are, however, very well developed, and the pistils especially so. The fruit is small, dull red, mixed with yellowish green color, and only fair in quality. Several specimens received from Mr. Robinette in October of this year were carefully examined; each one was well supplied with seeds. Not only was there a core, but the core was unusually well developed, there being a secondary and even a tertiary core with a few seeds in each, extending towards the calyx and causing an opening there nearly one-half inch in width and about the same in depth. This variety is not valuable as a fruit, but as a botanical curiosity it might be of some interest to those engaged in the study of vegetable physiology. I mention it that the reader may not be induced to plant trees with the expectation of having choice fruit.

## THE PEAR.

*Philopena*.—Within the past year there have been brought to my notice a few varieties of this fruit which are well worthy of notice. Of this number is the *Philopena*, a seedling variety originated by Reuben Ragan, that venerated pioneer pomologist of Indiana. He supposed it to have been grown from seed of the Seckel. The old tree is now about fifty years old and more than a foot in diameter, and so far has been free from disease, bearing large crops of fruit regularly. Specimens were sent me this year by Prof. W. H. Ragan, of Greencastle, Ind., the son of the originator. The illustration (Plate 7) was made from one of these.

Size, medium,  $3\frac{1}{2}$  by  $2\frac{1}{2}$  inches in diameter; shape, rather long, irregular, unequal; surface, rather smooth, bronzy olive, with a dull mottled blush on the sunny side; stem, short and stout; basin, shallow; calyx, small, closed; core, small, compact, connected by tough fiber to the stem; seeds numerous, rather small, and plump; flesh, firm, fine-grained, but becoming quite tender when ripe; quality, good; season, October to November in central Indiana.

## GRAPE SIRUP.

A new industry has just sprung up in California, which gives promise of being a profitable one to the grape-grower and very acceptable to the consumer of the product.

A sirup is made by evaporating the freshly expressed juice of the grape until it becomes about the consistency of molasses. In view of the fact that in California there are hundreds of thousands of acres planted to the varieties of *Vitis vinifera*, which are very rich in sugar, and that the price of wine into which they have heretofore been largely made is exceedingly low, it would seem that the manufacture of grape sirup is a good way to utilize the crop. I have been informed that this sirup can be produced at a cost not exceeding 50 cents per gallon, and if this be true I see no reason why it may not become a staple article of food as the means of production are practically without limit. Samples have been received from Snavely & Baker of Woodland, Cal. These were thoroughly tested, and persons who are competent judges conceded that in quality it was quite equal to maple sirup. The flavor of the sirup depends somewhat upon the variety of the fruit from which it is made, but all the sirups have the peculiar delicate taste which reminds one of the best raisins. As a table sirup and for culinary purposes it seems, after trial, to be very satisfactory.

## A FRUIT LADDER.

There is scarcely a farmer who does not occasionally need a ladder in gathering his fruit; and I take pleasure in submitting a drawing and description of the best one I have ever seen. Take a pole of any desired length, but not of large diameter, sharpen it at the top to a slim point, and several feet from the top put a flat iron band about it, or in case a band is not at hand it may be securely wrapped with wire to keep it from splitting. But the band should not be thick or with sharp edges else it may cut or chafe the bark of the tree. If the grain is straight it may be split with wedges from the butt to

this band, or it may be split with a rip-saw. Now spread it at the bottom to several feet in width, and if the ladder is to be quite tall this should be 5 or 6 feet or even more. Nail a brace temporarily across the butt ends to hold them apart, and bore holes at proper distances and at proper angles; or if the spread is not too great they may be bored before the pole is split. Rounds of tough, strong material may now be inserted, beginning at the top, first removing the brace.

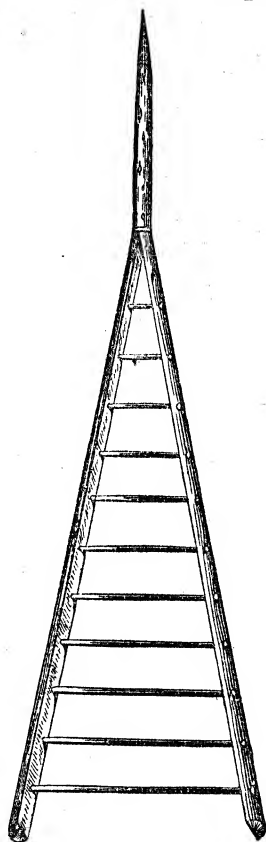
Such a ladder can be thrust upward into a tree and placed in a fork or against a branch without danger of falling or being unsteady, and it has the additional advantage of being very light at the top and easy to handle. If desired, a third leg or brace can be added by hingeing it to the top round through a hole, thus making a step-ladder.

#### FRUIT-GROWING IN FLORIDA.

During a part of the months of February and March of the present year, I made an official visit to Florida for the purpose of becoming acquainted from actual observation with the condition of fruit culture there, and in order better to understand the peculiar conditions with which the fruit-grower of that State has to deal. The citrus fruits, and especially the orange, which is the mainstay of the Florida fruit-growers, were somewhat past the flush of their season of ripening, but in every section visited opportunity yet remained to observe the ripe fruit upon the trees. The limited time at my command did not admit of a visit to the west coast, but the conditions in the central part of the State and of the east coast were thoroughly investigated.

The orange-growing section is bounded on the north by a line running east and west passing not far from Jacksonville, which is near the northern part of the State, and on the south by one running in a northeasterly direction from Charlotte Harbor, on the Gulf coast, to the Atlantic. South of the latter either the culture of the orange has been very little attempted or the climate is unsuited to it. The region between these lines contains sufficient land suitable to orange culture to produce a supply that will fully meet the demands of the entire United States for years to come. The product of California and Louisiana is not to be overlooked, but if it were necessary to secure the entire supply of oranges for the Northern markets from Florida (which is not the case) there appears to me no good reason why it might not be done.

The orange crop of Florida last year amounted to nearly 2,000,000 boxes, and observation leads me to believe that the trees now planted will produce within the next ten years 10,000,000 boxes annually, as



the orange tree is long lived and a continuous bearer under proper culture. Some of the oldest trees now growing in Florida will still be in full bearing ten years hence. It is not my purpose to speak with special favor of any particular part of the orange-growing section, as beyond doubt many places which I did not visit are equally as good as those visited. I endeavored to examine fruits of all kinds, as far as the season would permit, growing on all kinds of land, from the highest to the lowest and from the richest to the poorest. Some have thought good oranges can not be grown in the flat sandy pine land, but many orchards which I visited, and of which I carefully tested the fruit, gave convincing evidence to the contrary, and I believe that with proper fertilization and cultivation of the soil abundant crops may be grown on such lands. The great lack of Florida is rich land, but where rich soil is wanting good sense may be exercised with satisfactory results. Very rich and extensive phosphate beds have recently been discovered in western Florida, and this may solve the problem of commercial manures for the State. Toward the western part of the State there lies a broad, slightly elevated, ridge, running generally in a southeasterly direction, which in great part is covered by a growth of hard-wood timber, consisting chiefly of oak, several species of elm, hickory, magnolia, and red bay. The soil is of a much firmer nature than that of the pine lands, and is composed in part of clay; rocks protrude from the surface in some portions of these higher lands. Here may be seen some of the best orange orchards in the State, and I think it is universally admitted that such lands, where frosts are not likely to injure the crops, are the best suited to orange culture, and in fact to that of all citrus fruits. Such lands are usually called "high hummock," in contradistinction to the "low hummock," which, in addition to a similar growth of hard wood, bear also the cabbage palmetto, and lie near the level of the numerous lakes. It is in the hummocks that the wild orange groves are found, and never in the pine lands. These wild groves are seedlings from old plantations established by Spaniards and other foreigners who first followed the aboriginal inhabitants of Florida.

None of the citrus fruits are thought to be indigenous to the American continent, though a claim to the contrary has recently been made in behalf of Mexico.

On the east coast of Florida, running parallel with the ocean and separated from it by a narrow strip of land, are bodies of water, generally a little salt, reaching almost the entire length of the State. They are connected with the ocean by shallow inlets, and vary in width from one-half mile to several miles. They are narrow shallow sounds, but are commonly spoken of as "rivers." Such are Indian, Hillsborough, Halifax, and New Rivers, and such is Lake Worth. Along these bodies of water, and reaching but a short distance from them, are some of the finest and most productive orange lands in the State.

#### TROPICAL FRUITS.

As commonly understood, tropical fruits are such as will not endure frost without injury; and even in Florida the places where they will grow successfully are comparatively limited in extent. The influence of the water upon the cold-air waves which sweep over the country is well known and easily understood by practical fruit-growers. As in Florida the waves usually pass in an easterly or

southeasterly direction, the region south or southeast of the lakes is freest from attacks of frost. One location found in my travels along the southeastern shores of Lake Apopka was of this character, and although a frost had fallen over nearly all the State not long before I was there, the banana and pineapple plants and mango trees of this region showed no signs of having been touched; and there are many such protected nooks in other parts of the State. South of Charlotte Harbor, as I have been credibly informed, the tender plants and trees have for some years past suffered little or no damage by frost. On the east coast, beginning at the north end of Merritt's Island, which is a little south of the twenty-ninth parallel, the successful cultivation of the pineapple, banana, mango, sapodilla, and other tender trees begins; and having traveled the entire length of Indian River to Jupiter Inlet and beyond, I can state from personal observation that the culture of these fruits is carried on quite successfully, though in a rather small way. This is especially true of the long strip of land lying between Indian River and the Atlantic Ocean, where I saw many acres devoted to the culture of the pineapple. At Eden, which is on the mainland on the west side of Indian River, there are some of the most extensive pineapple plantations in the State.

A desire to examine the Lake Worth region led me to pass south of Jupiter Inlet, 8 miles from which point lies Lake Worth. This body of water is about 30 miles long and averages about a mile in width, and upon its borders I found

#### THE COCOANUT (*Cocos nucifera*)

growing luxuriantly and bearing abundantly. Nothing that I have ever seen in the form of trees or plants excels in graceful beauty the waving leaves of this tropical palm. The oldest of the trees were raised from nuts planted by Mr. Lang in 1860, and about twenty of them are still standing, being, I judged, about 35 feet in height. They were loaded with great clusters of nuts, which forcibly reminded me of pictures of the Orient. Every residence along the shore on either side is graced with cocoanut trees, and many persons are planting them by the acre. Whether or not this enterprise will prove a financial success so far as the fruit is concerned I am as yet unable to say, since the cocoanut is brought from the tropics by the ship-load so cheaply that it will be at least difficult to compete with the foreign product in our markets. However this may be, there is no doubt of the success of the growth of the cocoanut in this region. Hundreds of thousands of young cocoanut trees are growing along the coast and adjacent islands as far south as Key West.

It may not be generally known that the cocoanut, as it appears in our markets, is stripped of the coarse fiber or bast which surrounds it, and which makes a covering about 2 inches thick, with a smooth exterior. The nuts hang in large clusters of from ten to forty or even more, and several such clusters are found on a large tree, weighing in the aggregate some hundreds of pounds. The cocoanut has no fixed time of ripening, as the flowers keep constantly appearing and the ripe nuts dropping. Thrifty cocoanut trees are expected to produce each about one nut for every day in the year, but they rarely produce so many.

#### THE SAPODILLA (*Achras sapota*)

is an evergreen tropical tree. I saw it growing in several places, from Merritt's Island southward. The tree is very handsome, though



rather spreading in shape; the leaves are from 2 to 4 inches in length and of a glossy green. It bears fruit very abundantly, of roundish shape, slightly conical, and of a solid brown color, the surface resembling that of a dark russet apple. The flesh is of a light brown, varying to greenish white, and is exceedingly sweet and deliciously flavored. The seeds are rather numerous, usually numbering from five to ten, slightly elongated in shape, and of a shiny black color. The fruit can be easily shipped to market, where it brings a good price. Our entire supply at present is brought from the West Indies. The accompanying illustration (Plate 8) was made from a specimen grown by R. R. McCormick, of Palm Beach, Fla.

#### THE MANGO (*Mangifera indica*)

is one of the finest tropical fruits cultivated in the world. It has been introduced into many places in Florida, and trees have been fruiting there for a number of years. The freeze of January, 1886, killed many of them to the ground, but I saw several bearing trees along the shores of Lake Worth, and one on Merritt's Island. One tree about 10 feet in height, in Mr. Brelsford's grounds at Palm Beach, produced this year 1,106 ripened fruits, by actual count, besides a number which were taken without the knowledge of the owner.

The mango, being an evergreen tree, produces a pleasing effect either as a fruit or an ornamental tree, the leaves being from 6 inches to a foot long, resembling those of the chestnut in shape, and appearing quite glossy and brilliant in color. The growing shoots have a wine-colored tint, which adds to the beauty of the tree. It grows to a large size, and the wood is valued for mechanical purposes in the East Indies. All the varieties now fruiting in Florida are common seedlings and the fruit is much inferior to the choicer kinds, which are only propagated by grafting. A number of the best kinds have been recently introduced and it is expected that within the next few years our Northern markets will begin to receive the fruit. The fruit averages in weight from 8 to 10 ounces and is kidney-shaped, with a large flat seed in the center to which is attached a sort of fiber, especially in the common or poorer kinds; but the choice varieties are entirely free from this characteristic. The flesh is yellow and exceedingly sweet and aromatic in flavor. The fruit will always be rare and high priced in our Northern markets, but there is no reason why we may not produce a large share of the amount consumed by our people instead of importing it from the West Indies, as is now the case, while people living in tropical Florida may enjoy the fruit very generally. It is of a nature so delicate that it suffers decay during a long voyage by ship, but rapid transportation by rail from southern Florida will, in a great measure, overcome this difficulty. The tree seems quite well adapted to the poorer sandy lands and produces fruit abundantly even in such soil with reasonable culture.

#### THE BANANA.

The banana is grown in a small way in many parts of Florida; but only the poorest kind, known as the Orinoco or "horse banana," is able to withstand the frosts of the more exposed regions. The fruit when cut green and left to ripen on the stem is poorly flavored and scarcely fit to eat, but when left to ripen on the tree it is of fair



quality. Along the south end of "Indian River" and on the peninsula between Lake Worth and the ocean I saw many small plantations of the banana, but the variety usually cultivated is the dwarf species known to science as *Musa cavendishii*. This does not grow more than 4 to 6 feet high, and the "fingers" are comparatively small, but the quality is quite good although not equal to those we usually buy in our markets. The banana needs rich land and careful culture. There is very little land suitable to its growth in Florida, even if the climate was sufficiently mild, and I seriously doubt if banana culture will ever be carried on profitably except in a very small way.

Hart's Choice, a variety of *Musa orientum* is a very small growing kind which was brought into public notice by Mr. E. H. Hart, of Federal Point, Fla., and is sometimes called the "fig banana;" in quality it is the best I have ever tasted of the Florida product. This variety probably might be tested with profit by the amateur fruit-growers of southern Louisiana, southern Texas, and southern California.

Many other tender fruits are grown in the southern part of Florida, the culture of which will in due time attain considerable importance, and it is my purpose to mention some of them in future reports.

### SEMI-TROPICAL FRUITS.

#### THE KAKI.

The confused condition of the nomenclature of this fruit for years past, both in Japan and in this country, is a matter of regret and annoyance to cultivators. Thousands of trees have been imported from Japan bearing the names of the best established varieties there, which have proved upon fruiting to be often incorrectly named. One case recently has come to my notice in which ten trees bearing the name of one of the leading varieties had been imported with special care, and when they fruited there were found to be three varieties, no one of which was that which the importer had sought to secure. In 1887 I was able to get specimens from the Southern States sufficient in number to enable me to determine the characteristics of three varieties, viz, *Hachia*, *Tane Nashi*, and *Yemon*.

Last year, owing to the prevalence of yellow fever in Florida (where a majority of the trees now fruiting are found), it was not possible to secure specimens either by mail or express, but during the present year we have been much more successful. A great quantity of the fruit has been received from every State and Territory in which it grows, and the matter has received close attention from first to last.

Having the benefit of original paintings made by Japanese artists, and descriptions of the different kinds given by pomologists of that country, and a considerable correspondence with them as well as with a large number of the principal growers and importers of the fruit in this country, I feel justified in saying that only about ten leading varieties are grown largely in Japan, all of which have been introduced and are now fruiting in this country. The above mentioned three varieties described in my report of 1887 are among the number, and the others are: Hyakume, Zengi, Yeddo Ichi, Yamato, Diadai Maru, Kurokume, and Gosho.

In the course of my examination and study of the different kinds of this fruit from different localities I have arrived at the following

conclusions: No variety is absolutely seedless under all circumstances, although seeds are fewest in those generally described as "seedless." I am informed by Rev. Mr. Loomis, of Yokohama, who has been a close observer of this fruit for many years past, that in Japan the Yemon is often quite seedy, but in this country it is rarely so. The Yeddo Ichi and Zengi are more inclined to be seedy than any other varieties (of those mentioned as "seedless") that I have examined, and specimens of Zengi have been sent me which were quite seedy, yet fruit of the same tree last year was almost devoid of seeds. I therefore conclude that this difference results from variation of the essential organs, the stamens sometimes being quite abundant and at other times wanting, or nearly so; or it may be the effects of cold or rain that destroys the pollen or prevents its falling on the pistillate flowers, or some other local cause that we have not yet learned. I have also observed that *the flesh is dark colored or flecked, with brownish purple streaks only immediately next the seeds*. Sometimes only one or two small seeds will be found in a specimen, and usually in such cases the flesh is darkened near them, and elsewhere it is orange colored with no brownish streaks. The very seedy varieties, such as Zengi and Yeddo Ichi, are always dark fleshed, and specimens of Yemon, Tane-Nashi, or others having no seeds, are light colored. It is also observed that the dark-colored flesh is not acrid or astringent while yet hard, but the light-colored flesh is astringent until soft. It will therefore not be correct to conclude because a specimen or a few specimens of a variety are seedless or seedy that the variety is universally so.

*Hyakume (Hyá-ku-mé)*.—Plate 9 is an illustration of Hyakume, which is thought by many good judges to be one of the very best varieties. In size it is one of the largest, single specimens sometimes weighing a pound or more. The literal translation of Hyakume is "one hundred mé," the word *mé* being a unit of weight in Japan, and a hundred *mé* being about equal to one pound according to our standard of weight. In color the fruit is light orange and not so dark as some of the other varieties. Near the apex a number of marks like pin-scratches or leather cracks are usually found, which are shown in the illustration. It is elongated and slightly conical in shape, but is depressed and somewhat furrowed at the point. In flavor it is excellent. The tree is commonly said to be an abundant bearer and attains a good size. The illustration given in this report was made from a specimen received from T. K. Godbey, Waldo, Fla. Seeds are occasionally found in this variety, and their length is about twice their diameter.

*Yeddo Ichi*.—Literally translated "First from Yeddo," but changed into our English form it is "Yeddo's Best." It is medium sized, flat in shape, regular in outline, with a slight depression at the point opposite the stem. It is bright red in color, being among the darkest varieties known. The flesh is universally dark-brownish purple throughout. The flavor is exceedingly rich and sweet. The seeds are usually quite abundant and well developed and are about like a lima bean in shape. The tree is said to be an abundant bearer, and is among the hardiest varieties introduced.

The specimens from which the colored illustration (Plate 10) was made were received from G. L. Taber, of Glen St. Mary, Fla.

## FUTURE WORK.

It is my purpose to continue the investigation of the wild fruits, as I believe there is a vast store of wealth in them. This is especially true of the wild grape, plum, and many of the smaller fruits. Following the monograph on the wild grape will be undertaken one on the wild plum, covering the entire genus *Prunus* as it is found in the United States. The investigation, collection, and publication of concise information relative to wild fruits in their native habitats and the peculiar conditions under which they succeed or fail as well as the possible discovery of valuable varieties will, in my opinion, be of great benefit to fruit-growers as well as of interest to scientists.

In foreign countries, and especially in Asia, there are many varieties and even species and genera of fruits which have not been tried in this country. Many of these will no doubt prove of great value to our people, especially in the Southern States. In Europe it is probable that there is little that is new to be found in the line of fruits, as that continent has already been thoroughly explored by both scientific and practical men, and nearly everything worth having has already been tested in this country. It is possible, however, that there may be some varieties in eastern Europe suited to the cold climate of our Northern States and Territories, while in the Mediterranean regions there may no doubt be found some varieties of citrus fruits and figs which will add to the list of our choice varieties.

It is much to be desired that there should be a hearty co-operation between this division and the national, State, county, and local horticultural and pomological societies, and with the experiment stations, and it is a matter of regret that the appropriations heretofore have been insufficient for carrying out such plans on a practically useful scale. For the same reason the services of special agents were available only in a very limited degree, and had frequently to be dispensed with even when urgently required.

I have in course of preparation a list of known varieties of cultivated fruits grown in the United States, giving the correct or true name, and all the synonyms attached to each. The issue of this will be preceded by a series of circulars of inquiry as to the success or failure of each in the localities where they are cultivated. Questions will be asked as to the hardiness of the tree, plant, or vine, as the case may be; the productiveness, or the want of it; the exemption from attacks of fungus diseases; insects; the time of ripening, and other questions of a practical nature. From data thus obtained from practical men I shall be able to prepare special reports which, it is hoped, will be of practical value to fruit-growers and farmers. It is inexpedient to enlarge further upon plans which may have to be abandoned for lack of sufficient appropriation; but so far as circumstances will permit, farmers and fruit-growers will find in this division a faithful servant and ally in the line of work confided to it.

Respectfully submitted.

H. E. VAN DEMAN,  
*Pomologist.*

Hon. J. M. RUSK,  
*Secretary of Agriculture.*

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## REPORT OF POMOLOGIST.

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PARAGON.



HAWKEYE.

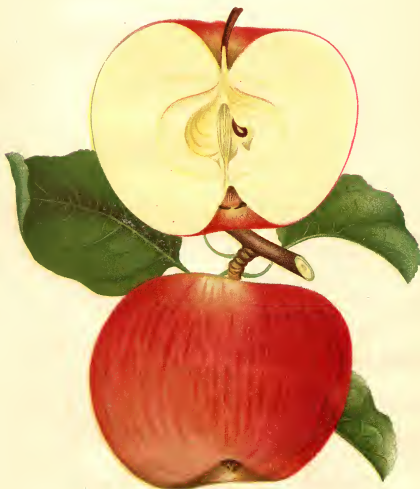


CRANDALL .

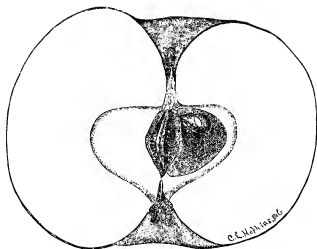


GARFIELD.

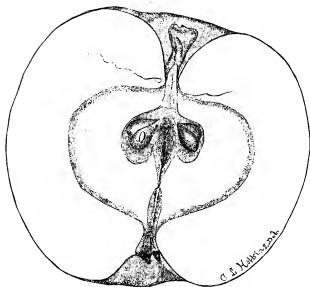




WINDSOR.



LACON.



PEPPER.





SAPODILLA.





W. H. Prestele Engr.

YEDDO ICHI.

Geo. W. Harris & Son's Lith. Phila.



